# SBC84602 Series

## VIA MARK

## CoreFusion
## All-In-One Capa Board

## User's Manual

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## CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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## ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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***MEMO***

# Chapter 1
# Introduction

The **SBC84602**, a 3.5" Capa board, supports VIA Mark CoreFusion™ processor at FSB 100/133MHz. The board integrates VIA Mark and VT82C686B chipsets that support TTL LCD + LVDS LCD + CRT, Dual Fast Ethernet (optional Gigabit) and AC'97 Link Interface Audio all in one single board. Additionally, it provides you with unique embedded features, such as 4 serial ports (3 x RS-232 and 1 x RS-232/422/485) and 3.5" Capa form factor for various applications in need of a compact size. It can achieve the best stability and reliability that makes your system perform the most endurable operation in any critical environments. The built-in Watchdog Timer has enhanced the system reliability that achieves a unique feature to distinguish itself from other boards.

Designed for the professional embedded developers, the embedded board SBC84602 Series is virtually ultimate one-step solution for embedded system applications.

## 1.1 Specifications

- **CPU: VIA Mark CoreFusion™ processor**
- **System Chipset: VIA Mark and VT82C686B**
- **CPU Frequency: FSB 100/133MHz**
- **BIOS**
  - Phoenix-Award BIOS, Y2K compliant
  - 4Mbit Flash, DMI, Plug and Play
  - PXE Ethernet Boot ROM
  - SmartView for multiple LCD type selection, display mode option and application extension features
  - RPL/PXE Ethernet Boot ROM
  - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory**
  - One 144-pin SODIMM for SDRAM socket
  - Maximum to 512MB memory
- **L2 Cache:** integrated in CPU
- **Onboard IDE**
  - One PATA-100 Primary as 44-pin 2.0 pitch box-header
- **Compact Flash Socket**
  - One Compact Flash Type II Socket
- **Onboard Multi-I/O**
  - One 26-pin box-header for shared FDD/LPT
  - 3 x RS-232, 1x RS-232/422/485
- **USB Interface**
  - Four USB ports with fuse protection and complies with USB Spec. Rev. 2.0
- **Watchdog Timer**
  - NMI (non-maskable interrupt) and Reset with 64 levels @ 0.5 ~ 1600 seconds

- **Graphics**
  - TTL LCD interface via "44-pin 2.0 pitch" + "20-pin 2.0 pitch" box-header for STN/DSTN/TFT panel; LVDS LCD interface via 1*Hirose 40-pin connectors and 1* 7-pin invertor connector; 1* D-sub 15-pin CRT from DAC port
- **Expansion Slot**
  - One PC/104 interface
- **Ethernet**
  - Dual Fast Ethernet RTL8100C (optional Gigabit RTL8110S) with integrated Boot ROM with RPL and PXE
- **Audio**
  - AC'97 Link Interface
  - VT1613 for two channels audio output with ampirfy(LM1877)
- **Power Management**
  - ACPI (Advanced Configuration and Power Interface)
- **Form Factor**
  - **3.5" Capa form factor**

***NOTE**: All specifications and images are subject to change without notice.*

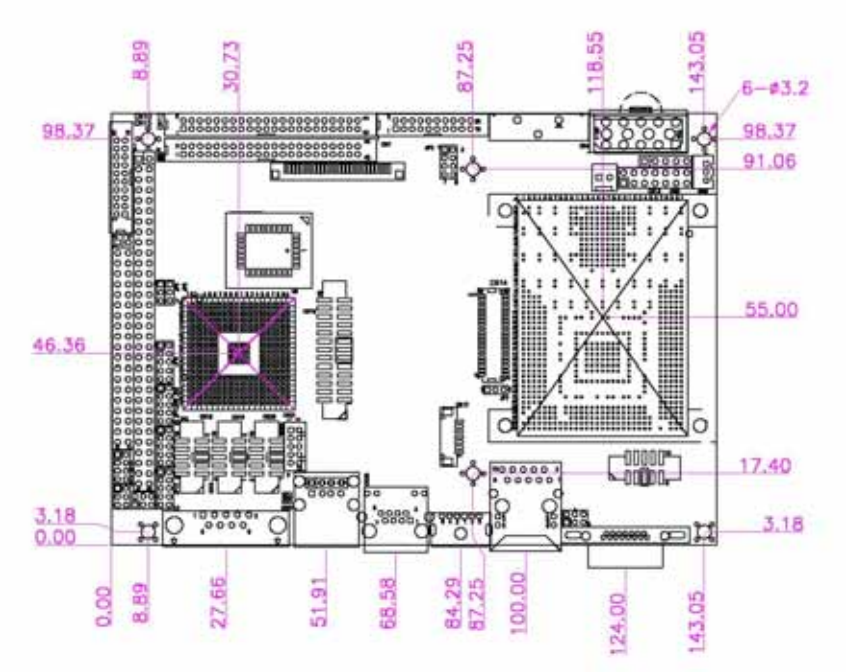
## 1.2 Utilities Supported

- Chipset Driver
- VGA Driver
- Ethernet Driver
- Audio Driver

## *MEMO*

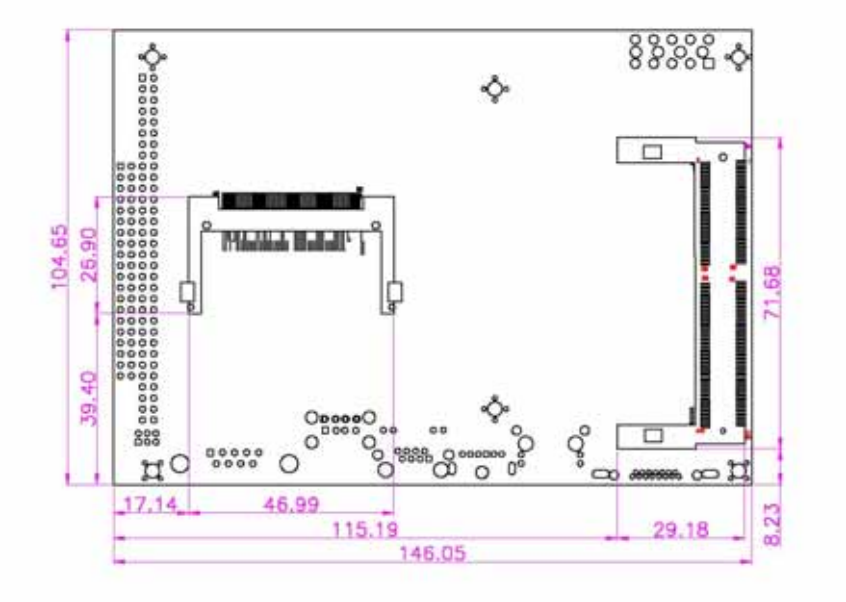
# Chapter 2
# Jumpers and Connectors

## 2.1 Board Layout and Fixing Holes




**Component Side**

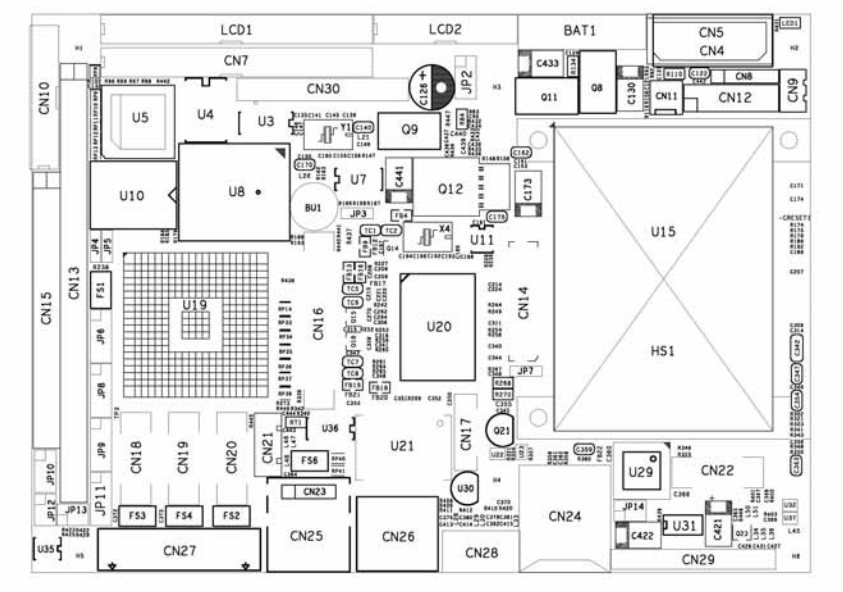
***Note:*** *The Limited Height of Component Side is 30 mm.*



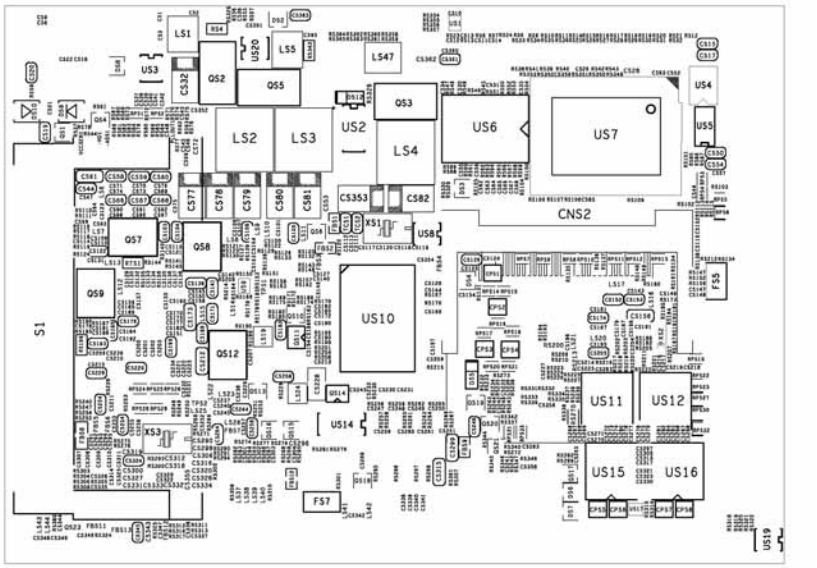

**Solder Side**

***Note:*** *The Limited Height of Solder Side is 9 mm.*

## 2.2 Placement




**Component Side**


LS1
US3
US20
LS5
LS47
US4
QS2
QS5
QS3
US2
US6
US7
US5
LS2
LS3
LS4
CS353
CS582
CNS2
XS1
US8
QS7
QS8
QS9
US10
FS5
S1
QS12
US11
US12
XS3
US14
US15
US16
FS7
US19

**Solder Side**

## 2.3 Jumper Settings

Proper jumer settings configure the **SBC84602** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Here is a list of jumper settings：

| Jumper | Default Setting | | Jumper Setting |
|---|---|---|---|
| JP2 | +12V ONLY Selection | | Open |
| JP3 | WDT Selection | | Short 2-3 |
| JP4 | Clear CMOS | | Short 1-2 |
| JP5 | CFD Voltage Selection | | Short 2-3 |
| JP6 | COM3 Mode Select | CN20 Pin 1: DCD | Short 7-9 |
| | | CN20 Pin 9: RI | Short 8-10 |
| JP7 | Flat Panel 1 Power Selection | | Short 1-2 |
| JP8 | COM4 Mode Select | CN19 Pin 1: DCD | Short 7-9 |
| | | CN19 Pin 8: RI | Short 8-10 |
| JP9 | COM1 Mode Select | CN27 Pin 1: DCD | Short 7-9 |
| | | CN27 Pin 8: RI | Short 8-10 |
| JP11 | COM2 Mode Select | CN18 Pin 1: DCD | Short 7-9 |
| | | CN18 Pin 8: RI | Short 8-10 |
| JP10 | COM1 RS232/RS422/RS485 Selection | | Short 1-2 |
| JP12 | COM1 RS232/RS422/RS485 Selection | | Short 3-5, 4-6 |
| JP13 | COM1 RS232/RS422/RS485 Selection | | Short 3-5, 4-6 |
| JP14 | AUDIO LINE OUT/AMP Selection | | Short 3-5, 4-6 |

### 2.3.1 CMOS Clear Jumper: JP4

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

| Description | Function | Jumper Setting |
|---|---|---|
| CMOS Clear | Normal (Default) | |
| | Clear CMOS | |

### 2.3.2 Compact Flash Power Selection Jumper: JP5

This jumper is to select the voltage for Compact Flash interface.

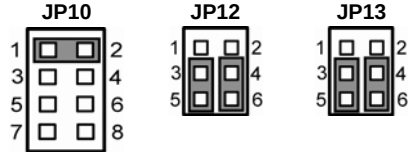
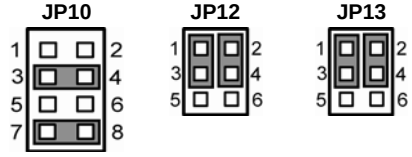
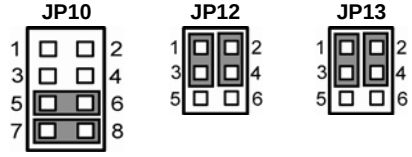
| Description | Function | Jumper Setting |
|---|---|---|
| Compact Flash Power Select | 5V (Default) | |
| | 3.3V | |

### 2.3.3 Power Supply Selection Jumper: JP2

| Description | Function | Jumper Setting |
|---|---|---|
| Power Supply Selection | +12V ONLY | |
| | +12V | |

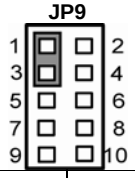
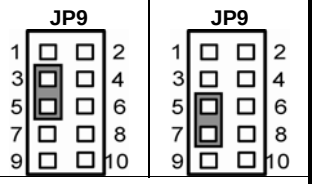
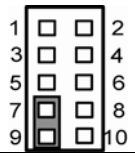
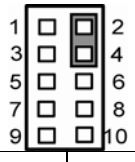
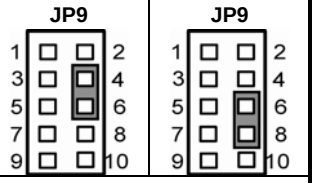
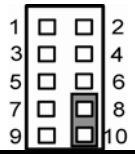
### 2.3.4 COM1 Mode Selection Jumpers: JP10, JP12, JP13

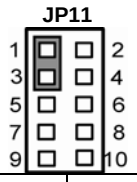
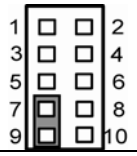
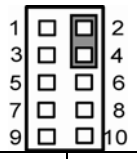
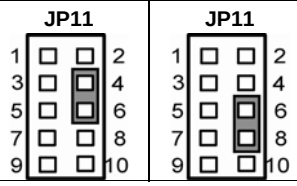
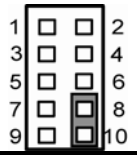
These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.

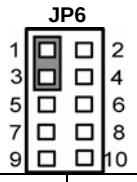
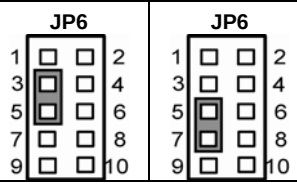
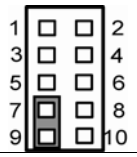
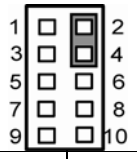
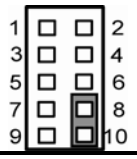
| Description | Function | Jumper Setting |
|---|---|---|
| COM1 | RS-232 (Default) |  |
| | RS-422 |  |
| | RS-485 |  |

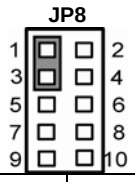
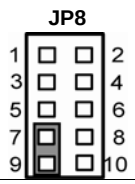
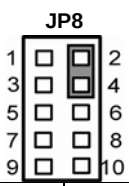
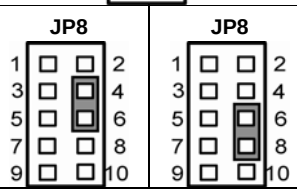
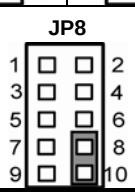
### 2.3.5 COM1~4 Mode Selection Jumpers: JP6, JP8, JP9, JP11

These jumpers select COM1~ COM4 ports' communication mode to operate RS-232 or RS-422/485.

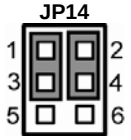
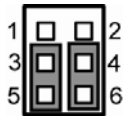
| Description | Function | Jumper Setting |
|---|---|---|
| COM1 (CN27) | Pin 1=5V |   |
| | Pin 1=12V |   |
| | *Pin 1=DCD |   |
| | Pin 9=5V |   |
| | Pin 9=12V |   |
| | *Pin 9=RI |   |

| Description | Function | Jumper Setting |
|---|---|---|
| COM2 (CN18) | Pin 1=5V |  |
| | Pin 1=12V | |
| | *Pin 1=DCD |  |
| | Pin 8=5V |  |
| | Pin 8=12V |  |
| | *Pin 8=RI |  |

| Description | Function | Jumper Setting |
|---|---|---|
| COM3 (CN20) | Pin 1=5V |  |
| | Pin 1=12V |  |
| | *Pin 1=DCD |  |
| | Pin 9=5V |  |
| | Pin 9=12V | |
| | *Pin 9=RI |  |

| Description | Function | Jumper Setting |
|---|---|---|
| COM4 (CN19) | Pin 1=5V |  |
| | Pin 1=12V | |
| | *Pin 1=DCD |  |
| | Pin 8=5V |  |
| | Pin 8=12V |  |
| | *Pin 8=RI |  |

### 2.3.6 Audio Output Selection Jumper: JP14

| Description | Function | Jumper Setting |
|---|---|---|
| Audio Output Selection | Line Out | JP14<br>  <br> |
| | Speak Out (Default) | JP14<br>  <br> |

### 2.3.7 Power Selection of Flat Panel 1'ST Connector (VDDM1 of LVDS1): JP7

This jumper is to select the power for LVDS interface.

| Description | Function | Jumper Setting |
|---|---|---|
| VDDM | 3.3V (Default) | JP7<br> <br> |
| | 5V | JP7<br> <br> |

## 2.4 Connectors

Connectors connect the CPU card with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the SBC84602 Series.

| Connectors | Label |
|---|---|
| SDRAM SODIMM Socket | S1 |
| Compact Flash Connector | CNS2 |
| TTL 24BIT LCD INTERFACE | LCD1 |
| POWER CONNECTOR | CN4 |
| TTL 36BIT LCD INTERFACE | LCD2 |
| IDE Connector | CN7 |
| IRDA INTERFACE | CN8 |
| SM BUS CONNECTOR | CN9 |
| 8BIT IN/OUT DIO Connector | CN10 |
| +5V FAN Power connector | CN11 |
| Flat Panel Bezel Connector | CN12 |
| PC-104 | CN13, CN15 |
| 1'ST LVDS Connector | CN14 |
| LPT port Connectors | CN16 |
| LVDS Inverter Connector | CN17 |
| Com2 Connector | CN18 |
| Com4 Connector | CN19 |
| Com3 Connector | CN20 |
| USB Connector | CN21 |
| Audio Connector | CN22 |
| USB CONNECTOR(4 pin) | CN23 |
| Ethernet Connector | CN24 |
| USB CONNECTOR | CN25 |
| Ethernet Connector | CN26 |

| Connectors | Label |
|---|---|
| Com1 Connector | CN27 |
| Keyboard and Mouse Connector | CN28 |
| VGA CRT Connector | CN29 |
| F.D.D Connector | CN30 |

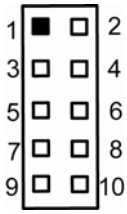
-- End of Connectors Table --

### 2.4.1 Power Input Connector: CN4

Use this connector to connect standard power supply +12V & +5V inputs. This card runs in full functions only with 5V only input power. 12V input power is required for LCD interface only.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | PS_ON | 2 | GND |
| 3 | GND | 4 | +12V |
| 5 | NC | 6 | SB5V |
| 7 | +5V | 8 | +5V |
| 9 | -12V | 10 | GND |

CN4



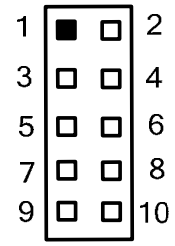

### 2.4.2 USB Connectors: CN21, CN23, CN24

The board features these Universal Serial Bus (USB) connectors compliant with USB 2.0 (480Mbps) using various USB peripherals, such as monitor, keyboard and mouse, etc. The board has box-header connectors **(CN21/CN23/CN24)**. Please refer to the detailed USB connectors' pin assignments next page.

**USB Connectors:**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | VCC | 2 | VCC |
| 3 | D0- | 4 | D1- |
| 5 | D0+ | 6 | D1+ |
| 7 | Ground (GND) | 8 | Ground (GND) |
| 9 | Ground (GND) | 10 | Ground (GND) |

**CN21, CN23, CN24**

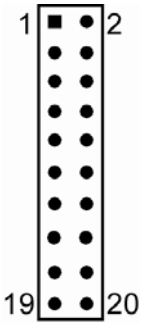



## 2.4.3 Digital I/O Port (DIO) Connector: CN10

The board is equipped an 8-channel digital I/O connector **CN10** that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | DIO Out-0 | 2 | DIO In-0 |
| 3 | DIO Out-1 | 4 | DIO In-1 |
| 5 | DIO Out-2 | 6 | DIO In-2 |
| 7 | DIO Out-3 | 8 | DIO In-3 |
| 9 | DIO Out-4 | 10 | DIO In-4 |
| 11 | DIO Out-5 | 12 | DIO In-5 |
| 13 | DIO Out-6 | 14 | DIO In-6 |
| 15 | DIO Out-7 | 16 | DIO In-7 |
| 17 | GND | 18 | GND |
| 19 | GND | 20 | NC |

**CN10**



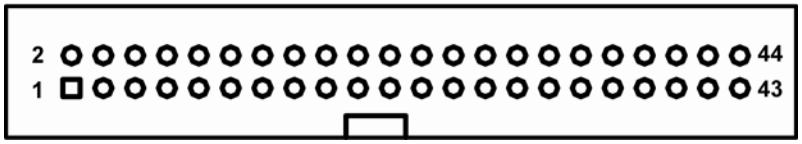
### 2.4.4 Enhanced IDE Interface Connector: CN7

The board has the built-in parallel ATA-100 IDE channel to support up to two IDE devices. **CN7** is a 44-pin IDE interface connector for standard 2.5" IDE device.

**CN7: 44-pin IDE interface connector**

| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | Reset # | 2 | GND | 3 | Data 7 |
| 4 | Data 8 | 5 | Data 6 | 6 | Data 9 |
| 7 | Data 5 | 8 | Data 10 | 9 | Data 4 |
| 10 | Data 11 | 11 | Data 3 | 12 | Data 12 |
| 13 | Data 2 | 14 | Data 13 | 15 | Data 1 |
| 16 | Data 14 | 17 | Data 0 | 18 | Data 15 |
| 19 | GND | 20 | No connector | 21 | No connector |
| 22 | GND | 23 | IOW # | 24 | GND |
| 25 | IOR # | 26 | GND | 27 | IOCHRDY |
| 28 | No connector | 29 | No connector | 30 | GND-Default |
| 31 | Interrupt | 32 | No connector | 33 | SA1 |
| 34 | No connector | 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0 # | 38 | HDC CSI # | 39 | HDD Active # |
| 40 | GND | 41 | VCC | 42 | VCC |
| 43 | GND | 44 | N.C | | |

**CN7**

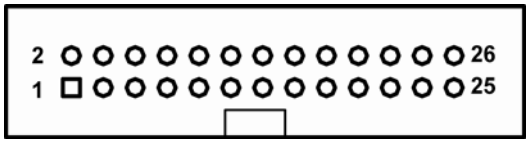


### 2.4.5 FDD Connector: CN30

The board provides a 26-pin FCC Z.I.F. type connector **CN30** to support a single floppy drive. The floppy drive could be any one of the following types: 3.5" 720KB or 1.44MB/2.88MB.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | +5V | 14 | STEP |
| 2 | INDEX# | 15 | GND |
| 3 | +5V | 16 | WDATA |
| 4 | DRIVE0 | 17 | GND |
| 5 | +5V | 18 | WGATE |
| 6 | DSKCHG | 19 | GND |
| 7 | No connector | 20 | TRK0 |
| 8 | No connector | 21 | GND |
| 9 | No connector | 22 | WPT |
| 10 | MOTOR ON | 23 | GND |
| 11 | No connector | 24 | RDATA |
| 12 | DIR | 25 | GND |
| 13 | No connector | 26 | HDSEL |

**CN30**



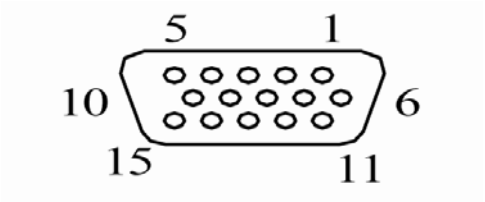
## 2.4.6 VGA/LCD Connectors: CN29, CN14, CN17

The board has several VGA/Flat Panel connectors that support CRT/ VGA. **CN29** is a 15-pin D-Sub connector for the CRT VGA display, **CN17** an inverter connector for LCD to support the system LCD backlight control with OS and driver independent, and **CN14** a JST SHDR-40V-S-B 40-pin connector for LVDS Interface LCD.

**CN29: 15-pin CRT/VGA Connector**

| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | Red | 2 | Green | 3 | Blue |
| 4 | N/A | 5 | GND | 6 | AGND |
| 7 | AGND | 8 | AGND | 9 | N/A |
| 10 | GND | 11 | N/A | 12 | DDC DAT |
| 13 | Horizontal Sync | 14 | Vertical Sync | 15 | DDC CLK |

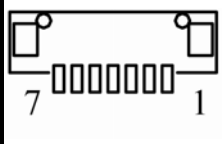
**CN29**




**CN17: HiroseDF13-7S-1.25C Connector for Inverter**

| Pin | Signal |
|---|---|
| 1 | 12V |
| 2 | 12V |
| 3 | 5V |
| 4 | ENAB |
| 5 | GND |
| 6 | GND |
| 7 | GND |

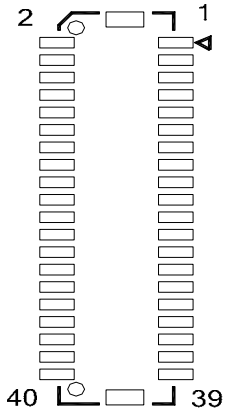
**CN17**



**CN14: JST SHDR-40V-S-B 40 pin connector**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | VCCM | 2 | VCCM |
| 3 | VCCM | 4 | VCCM |
| 5 | VCCM | 6 | VCCM |
| 7 | NC | 8 | N.C. |
| 9 | GND | 10 | GND |
| 11 | NC | 12 | Channel B D0- |
| 13 | NC | 14 | Channel B D0+ |
| 15 | GND | 16 | GND |
| 17 | Channel B CLK- | 18 | Channel B D1- |
| 19 | Channel B CLK + | 20 | Channel B D1+ |
| 21 | GND | 22 | GND |
| 23 | Channel A D0- | 24 | Channel B D2- |
| 25 | Channel A D0+ | 26 | Channel B D2+ |
| 27 | GND | 28 | GND |
| 29 | Channel A_D1- | 30 | NC |
| 31 | Channel A_D1+ | 32 | NC |
| 33 | GND | 34 | GND |
| 35 | Channel A D2- | 36 | Channel A CLK- |
| 37 | Channel A D2+ | 38 | Channel A CLK+ |
| 39 | GND | 40 | GND |

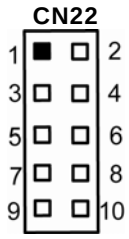
**CN14**



### 2.4.7 Audio Connector: CN22

The board supports an audio interface. **CN22** is a 10pin-header connector commonly used for the audio.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | MIC-IN | 2 | GND |
| 3 | Line In L | 4 | GND |
| 5 | Line In R | 6 | GND |
| 7 | Audio Out L | 8 | GND |
| 9 | Audio Out R | 10 | GND |




### 2.4.8 Serial Port Interface Connectors: CN18, CN19, CN20, CN27

The board has two onboard serial ports COM1, and COM2 jumper selectable with auto flow control features. COM1 and COM2 ports use +5V/12V power capability with DCD and RI jumper setting.

#### Serial Ports IRQ Selection

IRQ4 or IRQ3 can be selected as COM1 and COM2 IRQ. Both ports can be enabled or disabled through BIOS setting.

#### Serial Ports Power Selection

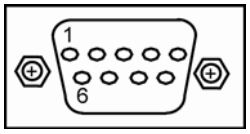
These two COM ports use +5V power capability with DCD jumper setting, and +12V power capability with RI.

The COM1 port is a DB-9 connector, and the following table shows the pin assignment of this connector.

**COM1 Port Connector: CN27**

| Pin | Signal |
|---|---|
| 1 | DCD, Data carrier detect |
| 2 | RXD, Receive data |
| 3 | TXD, Transmit data |
| 4 | DTR, Data terminal ready |
| 5 | GND, ground |
| 6 | DSR, Data set ready |
| 7 | RTS, Request to send |
| 8 | CTS, Clear to send |
| 9 | RI, Ring indicator |

**CN27**

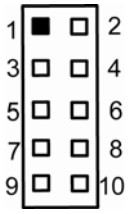



**COM2~COM4 Port Connectors: CN18, CN19, CN20**

The RS-232 pin assignment is listed on the following table.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | Data Carrier Detect (DCD) | 2 | Data Set Ready (DSR) |
| 3 | Receive Data (RXD) | 4 | Request to Send (RTS) |
| 5 | Transmit Data (TXD) | 6 | Clear to Send (CTS) |
| 7 | Data Terminal Ready (DTR) | 8 | Ring Indicator (RI) |
| 9 | Ground (GND) | 10 | NC |

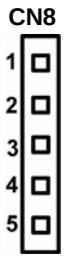
**CN18, CN19, CN20**



### 2.4.9 IrDA Connector: CN8

**CN8** is a 5-pin IrDA connector for wireless communication.

| Pin | Signal |
|---|---|
| 1 | +5V |
| 2 | NC |
| 3 | IRRX |
| 4 | GND |
| 5 | IRTX |




### 2.4.10 Parallel Port Connector: CN16

There is a multi-mode parallel port LPT1 that supports the following modes:

1. **Standard mode:**
   IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port

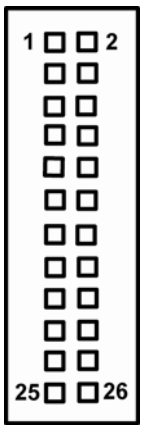
2. **Enhanced mode:**
   Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)

3. **High speed mode:**
   Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

Please refer to the list of CN16 pin assignment next page.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | Strobe# | 2 | Auto Form Feed# |
| 3 | Data 0 | 4 | Error# |
| 5 | Data 1 | 6 | Initialize# |
| 7 | Data 2 | 8 | Printer Select In# |
| 9 | Data 3 | 10 | GND |
| 11 | Data 4 | 12 | GND |
| 13 | Data 5 | 14 | GND |
| 15 | Data 6 | 16 | GND |
| 17 | Data 7 | 18 | GND |
| 19 | Acknowledge# | 20 | GND |
| 21 | Busy | 22 | GND |
| 23 | Paper Empty# | 24 | GND |
| 25 | Printer Select | 26 | NC |

**CN16**

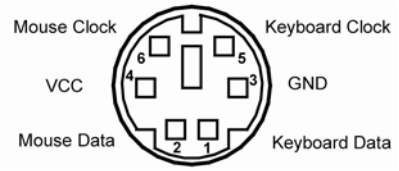



## 2.4.11 Keyboard and PS/2 Mouse Connector: CN28

The board provides a keyboard and Mouse interface. CN28 is a DIM connector for PS/2 keyboard Connection VIA "Y" Cable.

| Pin | Signal |
|---|---|
| 1 | Keyboard Data |
| 2 | Mouse Data |
| 3 | GND |
| 4 | VCC |
| 5 | Keyboard Clock |
| 6 | Mouse Clock |

**CN28**

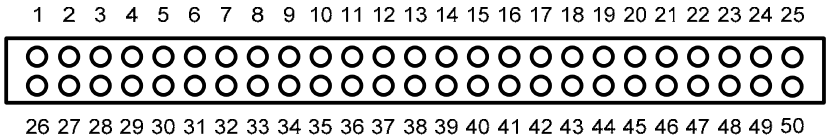


### 2.4.12 Compact Flash™ Socket (CNS2)

The board is equipped with a Compact Flash disk type-II socket on the solder side that supports the IDE interface Compact Flash disk card with DMA mode supported. The socket is especially designed to avoid any incorrect installation of the Compact Flash disk card.
When installing or removing the Compact Flash disk card, please make sure that the system power is off. The Compact Flash disk card is defaulted as the C: or D: disk drive in your PC system.

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | GND | 26 | CD1# |
| 2 | Data 3 | 27 | Data 11 |
| 3 | Data 4 | 28 | Data 12 |
| 4 | Data 5 | 29 | Data 13 |
| 5 | Data 6 | 30 | Data 14 |
| 6 | Data 7 | 31 | Data 15 |
| 7 | CS0# | 32 | CS1# |
| 8 | Address 10 | 33 | VS1# |
| 9 | ATASEL | 34 | IORD# |
| 10 | Address 9 | 35 | IOWR# |
| 11 | Address 8 | 36 | WE# |
| 12 | Address 7 | 37 | INTR |
| 13 | VCC | 38 | VCC |
| 14 | Address 6 | 39 | CSEL# |
| 15 | Address 5 | 40 | VS2# |
| 16 | Address 4 | 41 | RESET# |
| 17 | Address 3 | 42 | IORDY# |
| 18 | Address 2 | 43 | DMAREQ |
| 19 | Address 1 | 44 | DMAACK- |
| 20 | Address 0 | 45 | DASP# |
| 21 | Data 0 | 46 | PDIAG# |
| 22 | Data 1 | 47 | Data 8 |
| 23 | Data 2 | 48 | Data 9 |
| 24 | IOCS16# | 49 | Data 10 |
| 25 | CD2# | 50 | GND |

**CNS2**

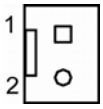



## 2.4.13 CPU Fan Connector: CN11

A CPU fan is always needed for cooling CPU heat. The CPU fan connector CN11 provides power to the CPU fan.

| Pin | Signal |
|---|---|
| 1 | Ground |
| 2 | +5V |

**CN11**




## 2.4.14 SMBUS Connector: CN9

Connector SMBUS1 is for SMBUS interface support.

| Pin | Signal |
|---|---|
| 1 | SMBUS DATA |
| 2 | SMBUS CLK |
| 3 | GND |

**CN9**

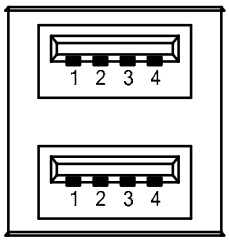
## 2.4.15 USB Port Connector: CN25

The Universal Serial Bus (USB) port connector on the board is for the installation of peripherals supporting the USB interface. **CN25** consists of two 4-pin standard USB ports.

**USB1 and USB2**

| Pin | Signal |
|---|---|
| 1 | USB Vcc |
| 2 | USB - |
| 3 | USB + |
| 4 | USB GND |

**CN25**



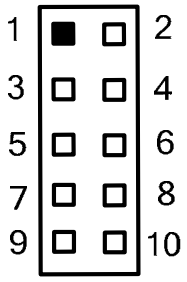

## 2.4.16 USB Connector: CN21

The Universal Serial Bus (USB) connector on the board is for the installation of peripherals supporting the USB interface. **CN21** is a 10-pin standard onboard USB connector.

**USB3 and USB4**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | VCC | 2 | VCC |
| 3 | USB3- | 4 | USB4- |
| 5 | USB1+ | 6 | USB4+ |
| 7 | Ground (GND) | 8 | Ground (GND) |
| 9 | Ground (GND) | 10 | Ground (GND) |

**CN21**



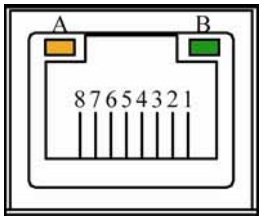
## 2.4.17 Ethernet RJ-45 Connectors: CN24, CN26

The board is equipped with a RJ-45 Ethernet connector. To connect the board to a Giga/100/10 Base-T hub, just plug one end of cable to the CN24/CN26connector.

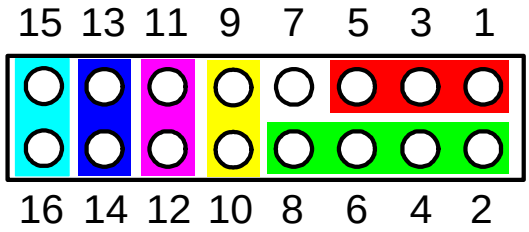
**CN24/CN26: RJ-45 Connector Pin Assignment**

| Pin | Signal |
|---|---|
| 1 | TX+ (Data transmission positive) |
| 2 | TX- (Data transmission negative) |
| 3 | Rx+(Data reception positive) |
| 4 | RJ45 termination |
| 5 | RJ45 termination |
| 6 | Rx- (Data reception negative) |
| 7 | RJ45 termination |
| 8 | RJ45 termination |

**CN24, CN26**




## 2.4.18 Flat Panel Bezel Connector: CN12




- **Power LED**

This 3-pin connector named as Pin 1 and 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**

Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the board to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **Power On/Off Button**

This 2-pin connector named as Pin 9 and 10 connect the front panel's power button to the board, which allows users to control the power supply to be power on/off state.

- **System Reset Switch**

Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**

This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 15 and 16 connect the hard disk drive to the front panel HDD LED, Pin 15 assigned as -, and Pin 16 as +.

- **Keyboard Lock**

Pin 13 and 14 are for Keyboard Lock setting. You can short Pin 13 and 14 for the Keyboard Lock function.

## 2.4.19 PC/104 Connectors: CN13, CN15

**CN13: PC/104 Bus Connector**

| Pin | Pin Name | Pin | Pin Name | Pin | Pin Name | Pin | Pin Name |
|---|---|---|---|---|---|---|---|
| 1 | IOCHCHK | 2 | GND | 3 | SD7 | 4 | RESETDRV |
| 5 | SD6 | 6 | +5V | 7 | SD5 | 8 | IRQ9 |
| 9 | SD4 | 10 | -5V | 11 | SD3 | 12 | DRQ2 |
| 13 | SD2 | 14 | -12V | 15 | SD1 | 16 | ENDXFR |
| 17 | SD0 | 18 | +12V | 19 | IOCHRDY | 20 | GND |
| 21 | AEN | 22 | SMEMW | 23 | SA19 | 24 | SMEMR |
| 25 | SA18 | 26 | IOW | 27 | SA17 | 28 | IOR |
| 29 | SA16 | 30 | DACK3 | 31 | SA15 | 32 | DRQ3 |
| 33 | SA14 | 34 | DACK1 | 35 | SA13 | 36 | DRQ1 |
| 37 | SA12 | 38 | REFRESH | 39 | SA11 | 40 | SYSCLK |
| 41 | SA10 | 42 | IRQ7 | 43 | SA9 | 44 | IRQ6 |
| 45 | SA8 | 46 | IRQ5 | 47 | SA7 | 48 | IRQ4 |
| 49 | SA6 | 50 | IRQ3 | 51 | SA5 | 52 | DACK2 |

| Pin | Pin Name | Pin | Pin Name | Pin | Pin Name | Pin | Pin Name |
|---|---|---|---|---|---|---|---|
| 53 | SA4 | 54 | TC | 55 | SA3 | 56 | SALE |
| 57 | SA2 | 58 | +5V | 59 | SA1 | 60 | OSC |
| 61 | SA0 | 62 | GND | 63 | GND | 64 | GND |

-- End of PCI/104 Bus Connector (CN13) Table –

**CN15: PC/104 Bus Connector**

| Pin | Pin Name | Pin | Pin Name | Pin | Pin Name | Pin | Pin Name |
|---|---|---|---|---|---|---|---|
| 1 | GND | 2 | GND | 3 | MEMCS16 | 4 | SBHE |
| 5 | IOCS16 | 6 | LA23 | 7 | IRQ10 | 8 | LA22 |
| 9 | IRQ11 | 10 | LA21 | 11 | IRQ12 | 12 | LA20 |
| 13 | IRQ15 | 14 | LA19 | 15 | IRQ14 | 16 | LA18 |
| 17 | DACK0 | 18 | LA17 | 19 | DRQ0 | 20 | MEMR |
| 21 | DACK5 | 22 | MEMW | 23 | DRQ5 | 24 | SD8 |
| 25 | DACK6 | 26 | SD9 | 27 | DRQ6 | 28 | SD10 |
| 29 | DACK7 | 30 | SD11 | 31 | DRQ7 | 32 | SD12 |
| 33 | +5V | 34 | SD13 | 35 | MASTER | 36 | SD14 |
| 37 | GND | 38 | SD15 | 39 | GND | 40 | (KEY) |

-- End of PCI/104 Bus Connector (CN15) Table –

### 2.4.20 TTL LCD 24BIT/36BIT Connector: LCD1

| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | -12V | 2 | +12VM | 3 | GND |
| 4 | GND | 5 | VDDM | 6 | VDDM |
| 7 | ENAVEE | 8 | GND | 9 | P0 |
| 10 | P1 | 11 | P2 | 12 | P3 |
| 13 | P4 | 14 | P5 | 15 | P6 |
| 16 | P7 | 17 | P8 | 18 | P9 |
| 19 | P10 | 20 | P11 | 21 | P12 |
| 22 | P13 | 23 | P14 | 24 | P15 |
| 25 | P16 | 26 | P17 | 27 | P18 |
| 28 | P19 | 29 | P20 | 30 | P21 |
| 31 | P22 | 32 | P23 | 33 | GND |
| 34 | GND | 35 | SHFCLK | 36 | FLM |
| 37 | M | 38 | LP | 39 | GND |
| 40 | ENABKL | 41 | GND | 42 | -SHFCLK |
| 43 | VDDM | 44 | VDDM | | |

### 2.4.21 XGA TTL LCD Connector: LCD2

| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | GND | 2 | GND | 3 | P24 |
| 4 | P25 | 5 | P26 | 6 | P27 |
| 7 | P28 | 8 | P29 | 9 | GND |
| 10 | GND | 11 | P30 | 12 | P31 |
| 13 | P32 | 14 | P33 | 15 | P34 |
| 16 | P35 | 17 | VDDM | 18 | VDDM |
| 19 | +12VM | 20 | +12VM | | |

# Chapter 3
# Hardware Description

## 3.1 Microprocessors

The SBC84602 Series supports VIA Mark CoreFusion™ processor at FSB 100/133MHz, which make your system operated under Windows 2000/XP and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

## 3.2 BIOS

The SBC84602 Series uses Award Plug and Play BIOS with a single 4Mbit Flash EPROM.

## 3.3 System Memory

The SBC84602 Series industrial CPU card supports one 144-pin SODIMM socket for a maximum memory of 512MB SDRAM. The memory module can come in sizes of 64MB, 128MB, 256MB and 512MB.

## 3.4 I/O Port Address Map

The Intel® Pentium® M/Celeron® M CPUs can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

| Address | Devices |
|---|---|
| 000-01F | DMA controller #1 |
| 020-03F | Interrupt controller #1 |
| 040-05F | Timer |
| 060-06F | Keyboard controller |
| 070-07F | Real time clock, NMI |
| 080-09F | DMA page register |
| 0A0-0BF | Interrupt controller #2 |
| 0C0-0DF | DMA controller #2 |
| 0F0 | Clear math co-processor busy signal |
| 0F1 | Reset math co-processor |
| 0F8-0FF | Math co-processor |
| 1F0-1F8 | Fixed disk controller |
| 300-31F | Prototype card |
| 380-38F | SDLC #2 |
| 3A0-3AF | SDLC #1 |
| 3B0-3BF | MDA video card (including LPT1) |
| 3C0-3CF | Reserved or EGA card |
| 3D0-3DF | CGA card |
| 3F0-3F7 | Floppy disk controller |
| 3F8-3FF | Serial port #1 (COM1) |
| 2F8-2FF | Serial port #2 (COM2) |
| 3E8-3EF | Reserved or Serial port #3 (COM3) |
| 2E8-2EF | Reserved or Serial port #4 (COM4) |
| 3F0-3FF | Super I/O |

## 3.5 Interrupt Controller

The **SBC84602 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

| NMI | Parity Check Error |
|---|---|
| IRQ0 | System timer output |
| IRQ1 | Keyboard |
| IRQ2 | Interrupt rerouting from IRQ8 through IRQ15 |
| IRQ3 | Serial port #2 |
| IRQ4 | Serial port #1 |
| IRQ5 | Reserved |
| IRQ6 | Floppy disk controller |
| IRQ7 | Parallel port #1 |
| IRQ8 | Real time clock |
| IRQ9 | Reserved |
| IRQ10 | Serial port #3 |
| IRQ11 | Serial port #4 |
| IRQ12 | PS/2 Mouse |
| IRQ13 | Math co-processor |
| IRQ14 | Primary IDE channel |

## *MEMO*

# Chapter 4
# Award BIOS Utility

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

## 4.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

## 4.2 Control Keys

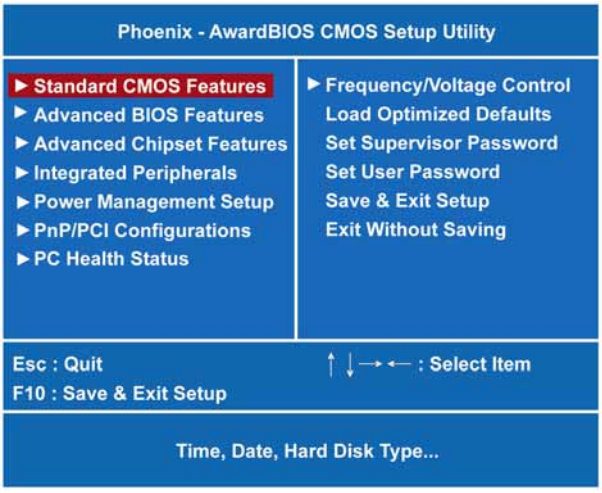
| | |
|---|---|
| **Up arrow** | Move cursor to the previous item |
| **Down arrow** | Move cursor to the next item |
| **Left arrow** | Move cursor to the item on the left hand |
| **Right arrow** | Move to the item in the right hand |
| **Esc key** | Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu |
| **PgUp/"+" key** | Increase the numeric value or make changes |
| **PgDn/"–" key** | Decrease the numeric value or make changes |
| **F1 key** | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| **(Shift) F2 key** | Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward |
| **F3 key** | Reserved |
| **F4 key** | Reserved |
| **F5 key** | Restore the previous CMOS value from CMOS, only for Option Page Setup Menu |
| **F6 key** | Load the default CMOS value from BIOS default table, only for Option Page Setup Menu |
| **F7 key** | Load the Setup default, only for Option Page Setup Menu |
| **F8 key** | Reserved |
| **F9 key** | Reserved |
| **F10 key** | Save all the CMOS changes, only for Main Menu |

## 4.3 Getting Help

- **Main Menu**
  The online description of the highlighted setup function is displayed at the bottom of the screen.
- **Status Page Setup Menu/Option Page Setup Menu**
  Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

## 4.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

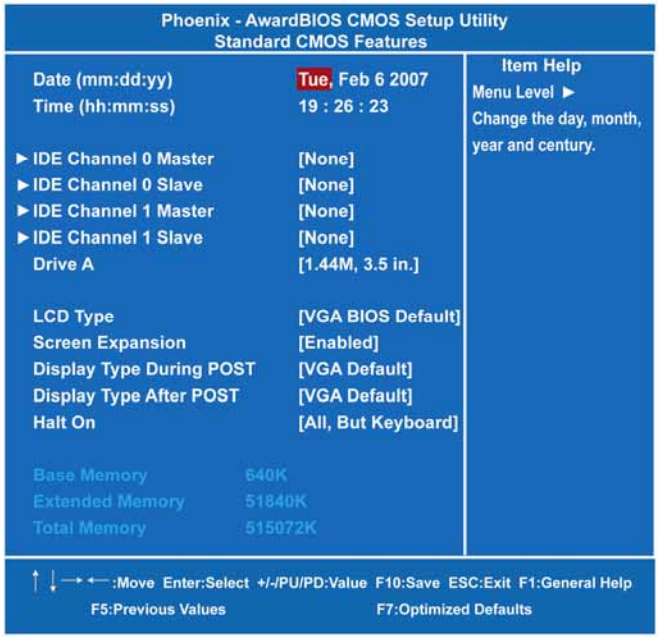

Phoenix - AwardBIOS CMOS Setup Utility
▶ Standard CMOS Features
▶ Advanced BIOS Features
▶ Advanced Chipset Features
▶ Integrated Peripherals
▶ Power Management Setup
▶ PnP/PCI Configurations
▶ PC Health Status
▶ Frequency/Voltage Control
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit
F10 : Save & Exit Setup
↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type...

***NOTE:*** *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

## 4.5 Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp> or <PgDn> key to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Item Help
Menu Level ►
Change the day, month, year and century.
Date (mm:dd:yy) Tue, Feb 6 2007
Time (hh:mm:ss) 19 : 26 : 23
► IDE Channel 0 Master [None]
► IDE Channel 0 Slave [None]
► IDE Channel 1 Master [None]
► IDE Channel 1 Slave [None]
Drive A [1.44M, 3.5 in.]
LCD Type [VGA BIOS Default]
Screen Expansion [Enabled]
Display Type During POST [VGA Default]
Display Type After POST [VGA Default]
Halt On [All, But Keyboard]
Base Memory 640K
Extended Memory 51840K
Total Memory 515072K
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

| | |
|---|---|
| **day** | It is determined by the BIOS and read only, from Sunday to Saturday. |
| **date** | It can be keyed with the numerical/ function key, from 1 to 31. |
| **month** | It is from January to December. |
| **year** | It shows the current year of BIOS. |

- **Time**
  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Primary Master/Primary Slave**
  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
  If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the HDD interface controller supports ESDI, select "Type 1".
  If the HDD interface controller supports SCSI, select "None".
  If the HDD interface controller supports CD-ROM, select "None".

| | | | |
|---|---|---|---|
| **CYLS.** | number of cylinders | **LANDZONE** | landing zone |
| **HEADS** | number of heads | **SECTORS** | number of sectors |
| **PRECOMP** | write precom | **MODE** | HDD access mode |

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **LCD Type**
  Use this item to select the resolution of the LCD display.
- **Screen Expansion**
  Use this item to stretch the image to full LCD display.
- **Display Type During POST**
  There are the following options for your selection: VGA DEFAULT, CRT, LCD, CRT+LCD, TV, and CRT+TV.
- **Display Type After POST**
  There are the following options for your selection: VGA DEFAULT, CRT, LCD, CRT+LCD, TV, and CRT+TV.
- **Halt On**
  This item determines whether the system will halt or not, if an error is detected while powering up.

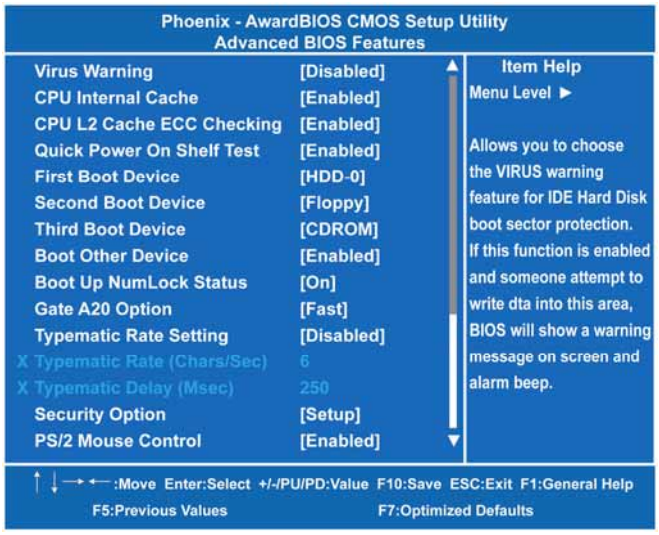
**Halt On**

| | |
|---|---|
| **No errors** | The system booting will halt on any errors detected. (default) |
| **All errors** | Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted. |
| **All, But Keyboard** | The system booting will not stop for a keyboard error; it will stop for other errors. |
| **All, But Diskette** | The system booting will not stop for a disk error; it will stop for other errors. |
| **All, But Disk/Key** | The system booting will not stop for a keyboard or disk error; it will stop for other errors. |

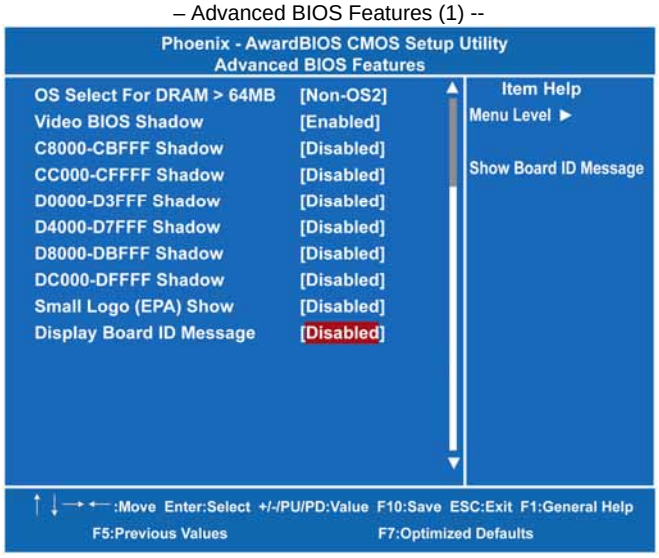
Press <Esc> to return to the Main Menu page.

## 4.6 Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
Virus Warning [Disabled]
CPU Internal Cache [Enabled]
CPU L2 Cache ECC Checking [Enabled]
Quick Power On Shelf Test [Enabled]
First Boot Device [HDD-0]
Second Boot Device [Floppy]
Third Boot Device [CDROM]
Boot Other Device [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
X Typematic Rate (Chars/Sec) 6
X Typematic Delay (Msec) 250
Security Option [Setup]
PS/2 Mouse Control [Enabled]
Item Help
Menu Level ►
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write dta into this area, BIOS will show a warning message on screen and alarm beep.
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

– Advanced BIOS Features (1) --


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
OS Select For DRAM > 64MB [Non-OS2]
Video BIOS Shadow [Enabled]
C8000-CBFFF Shadow [Disabled]
CC000-CFFFF Shadow [Disabled]
D0000-D3FFF Shadow [Disabled]
D4000-D7FFF Shadow [Disabled]
D8000-DBFFF Shadow [Disabled]
DC000-DFFFF Shadow [Disabled]
Small Logo (EPA) Show [Disabled]
Display Board ID Message [Disabled]
Item Help
Menu Level ►
Show Board ID Message
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

– Advanced BIOS Features (2) --

- **Virus Warning**
  This option flashes on the screen. During and after the system boot up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system with the following message. You can run an anti-virus program to locate the problem. The default setting is "*Disabled*".

| *! WARNING !* |
|---|
| *Disk boot sector is to be modified*<br>*Type "Y" to accept write or "N" to abort write*<br>*Award Software, Inc.* |

| | |
|---|---|
| **Enabled** | It automatically activates while the system boots up and a warning message appears for an attempt to access the boot sector or hard disk partition table. |
| **Disabled** | No warning message will appear for attempts to access the boot sector or hard disk partition table. |

***NOTE**: This function is only available with DOS and other operating systems that do not trap INT13.*

- **CPU Internal Cache**
  Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs, from 486-type and up, contain internal cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory for even faster access by the CPU. These items are used to enable (speed up memory access) or disable the cache function. By default, these are *"Enabled"*.
- **CPU L2 Cache ECC Checking**
  When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is "Enabled".
- **Quick Power On Self Test**
  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is "Enabled".

**Quick Power On Self Test**

| | |
|---|---|
| **Enabled** | Enable Quick POST |
| **Disabled** | Normal POST |

- **First/Second/Third Boot Device**
  These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Boot Other Device**
  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is "*Enabled"*.

- **Boot Up NumLock Status**
  Set the the Num Lock status when the system is powered on. The default value is *"On"*.

- **Gate A20 Option**
  The default value is *"Fast"*.

| | |
|---|---|
| **Normal** | The A20 signal is controlled by keyboard controller or chipset hardware. |
| **Fast** | Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method. |

- **Typematic Rate Setting**
  This item determines the typematic rate of the keyboard. The default value is *"Disabled"*.

| | |
|---|---|
| **Enabled** | Enable typematic rate and typematic delay programming. |
| **Disabled** | Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items, controlled by keyboard. |

- **Typematic Rate (Chars/Sec)**
  This option refers to character numbers typed per second by the keyboard. The default value is *"6"*.

**Typematic Rate (Chars/Sec)**

| | |
|---|---|
| **6** | 6 characters per second |
| **8** | 8 characters per second |
| **10** | 10 characters per second |
| **12** | 12 characters per second |
| **15** | 15 characters per second |
| **20** | 20 characters per second |
| **24** | 24 characters per second |
| **30** | 30 characters per second |

- **Typematic Delay (Msec)**
  This option defines how many milliseconds must elapse before a held-down key begins generating repeat characters. The default value is *"250"*.

| | |
|---|---|
| **250** | 250 msec |
| **500** | 500 msec |
| **750** | 750 msec |
| **1000** | 1000 msec |

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

| | |
|---|---|
| **System** | If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either. |
| **Setup** | If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied. |

***NOTE***: *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

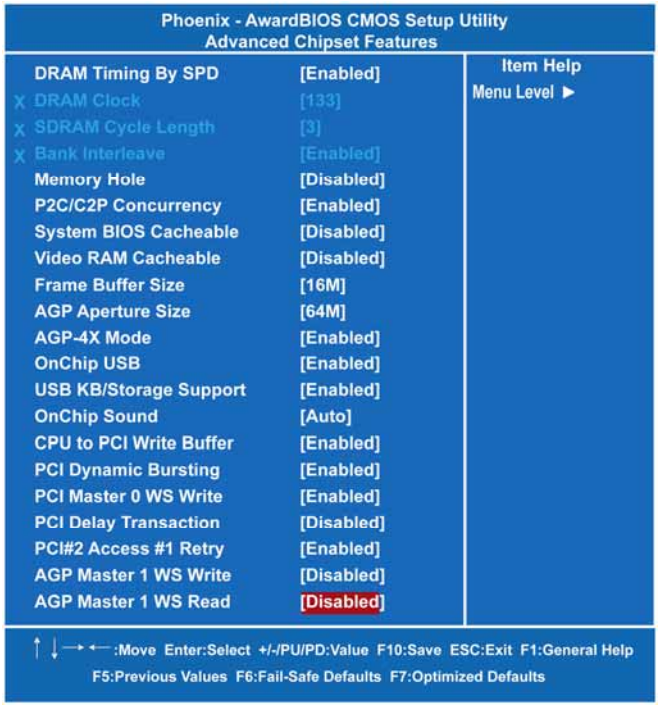
- **PS/2 Mouse Control**
  Use this item to set the use of PS/2 mouse or not. If there is a PS/2 mouse connected to your system, please enable this item.

- **OS Select For DRAM > 64MB**
  This item allows you to access the memory over 64MB in OS/2.
- **Video BIOS Shadow**
  Enable this parameter to turn on BIOS ROM shadowing for the block of memory normally used for standard VGA video ROM code.
- **C8000-CBFFF/DC000-DFFFF Shadow**
  These items determine whether optional ROM can be copied to RAM or not.
- **Small Logo(EPA) Show**
  If enabled, the EPA logo will appear during system booting up; if disabled, the EPA logo will not appear.

Press <Esc> to return to the Main Menu page.

## 4.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing By SPD [Enabled]
X DRAM Clock [133]
X SDRAM Cycle Length [3]
X Bank Interleave [Enabled]
Memory Hole [Disabled]
P2C/C2P Concurrency [Enabled]
System BIOS Cacheable [Disabled]
Video RAM Cacheable [Disabled]
Frame Buffer Size [16M]
AGP Aperture Size [64M]
AGP-4X Mode [Enabled]
OnChip USB [Enabled]
USB KB/Storage Support [Enabled]
OnChip Sound [Auto]
CPU to PCI Write Buffer [Enabled]
PCI Dynamic Bursting [Enabled]
PCI Master 0 WS Write [Enabled]
PCI Delay Transaction [Disabled]
PCI#2 Access #1 Retry [Enabled]
AGP Master 1 WS Write [Disabled]
AGP Master 1 WS Read [Disabled]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

- **DRAM Timing By SPD**
  Use this item to enable or disable the SDRAM timing, which can be defined by Serial Presence Detect.
- **DRAM Clock**
  Use this item to adjust memory speed. Option By SPD (Serial Detect Presence) makes it possible to do an automatic selection.
- **SDRAM Cycle Length**
  When synchronous DRAM is installed, the DRAM timing relies on the CAS latency's clock cycles. It is strongly recommended to keep this item at default value.

- **Memory Hole**
  You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements. The default value is "*Disabled*".
- **P2C/C2P Concurrency**
  Use this item to enable or disable the PCI to CPU and CPU to PCI concurrency. The default value is "*Enabled*".
- **System BIOS Cacheable**
  Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.
- **Video RAM Cacheable**
  Use this item to enable or disable the video RAM cache
- **Frame Buffer Size**
  Use this item to set the frame buffer size which your system is utilizing.
- **AGP Aperture Size**
  This item controls the memory space allocation to AGP for display. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space.
- **AGP-4X Mode**
  This item decides the AGP Mode of the integrated graphics.
- **OnChip USB**
  If the system is using a Universal Serial Bus (USB) controller, this item should be enabled; if an additional controller with higher performance installed, it should be disabled.
- **USB KB/Storage Support**
  Enable this item if your system supports a Universal Serial Bus (USB) Controller and a USB keyboard.
- **OnChip Sound**
  It allows the BIOS to detect whether you are using any sound devices. If a sound device is detected, the onboard sound controller will be enabled; if no sound, the onboard sound controller will be disabled. If you want to use different controller cards to connect sound connectors, please set it *"Disabled"*.
- **CPU to PCI Write Buffer**
  Enabling this item makes writes from the CPU to PCI bus buffered that compensates for the speed differences between CPU and PCI

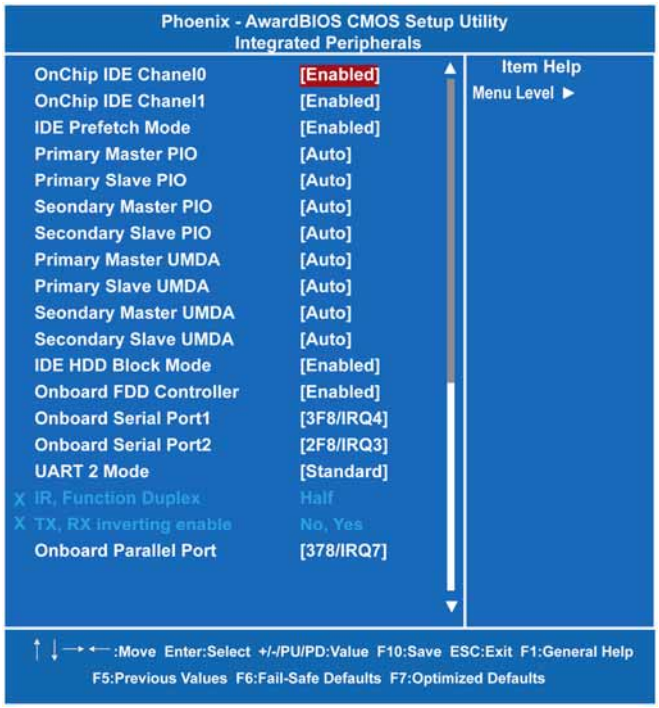
bus. Otherwise, disabling makes the writes not buffered and the CPU needs to wait until the write is completed before starting another write cycle.

- **PCI Dynamic Bursting**
  Use this item to enable or disable the PCI dynamic bursting function.
- **PCI Master 0 WS Write**
  When this item is enabled, the writes to the PCI bus will be executed with zero wait state.
- **PCI Delay Transaction**
  The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *"Enabled"* to support compliance with PCI specification version 2.1.
- **PCI#2 Access #1 Retry**
  When this item is disabled, PCI#2, by default, will be connected until the retrying is finished; when enabled, it will be disconnected after continous retrying fails.
- **AGP Master 1 WS Write**
  When this item is enabled, the write to the AGP (Accelerated Graphics Port) will be executed with one wait state.
- **AGP Master 1 WS Read**
  When this item is enabled, the read to the AGP (Accelerated Graphics Port) will be executed with one wait state.

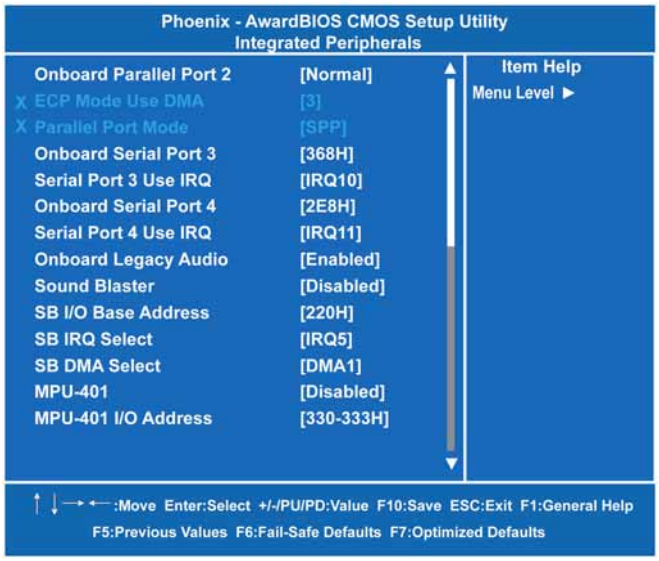
Press <Esc> to return to the Main Menu page.

## 4.8 Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
OnChip IDE Chanel0 [Enabled]
OnChip IDE Chanel1 [Enabled]
IDE Prefetch Mode [Enabled]
Primary Master PIO [Auto]
Primary Slave PIO [Auto]
Seondary Master PIO [Auto]
Secondary Slave PIO [Auto]
Primary Master UMDA [Auto]
Primary Slave UMDA [Auto]
Seondary Master UMDA [Auto]
Secondary Slave UMDA [Auto]
IDE HDD Block Mode [Enabled]
Onboard FDD Controller [Enabled]
Onboard Serial Port1 [3F8/IRQ4]
Onboard Serial Port2 [2F8/IRQ3]
UART 2 Mode [Standard]
X IR, Function Duplex Half
X TX, RX inverting enable No, Yes
Onboard Parallel Port [378/IRQ7]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

– Integrated Peripherals (1) --


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
Onboard Parallel Port 2 [Normal]
X ECP Mode Use DMA [3]
X Parallel Port Mode [SPP]
Onboard Serial Port 3 [368H]
Serial Port 3 Use IRQ [IRQ10]
Onboard Serial Port 4 [2E8H]
Serial Port 4 Use IRQ [IRQ11]
Onboard Legacy Audio [Enabled]
Sound Blaster [Disabled]
SB I/O Base Address [220H]
SB IRQ Select [IRQ5]
SB DMA Select [DMA1]
MPU-401 [Disabled]
MPU-401 I/O Address [330-333H]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

– Integrated Peripherals (2) --

- **OnChip IDE Channel0/1**
  The board supports two channel of ordinary IDE interface. Select "Enabled" to activate each channel separately.
- **IDE Prefetch Mode**
  Selecting "Enabled" reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to Disabled. This field does not appear when the Internal PCI/IDE field, above, is Disabled.
- **IDE Primary/Secondary Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
- **IDE Primary/Secondary Master/Slave UDMA**
  Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

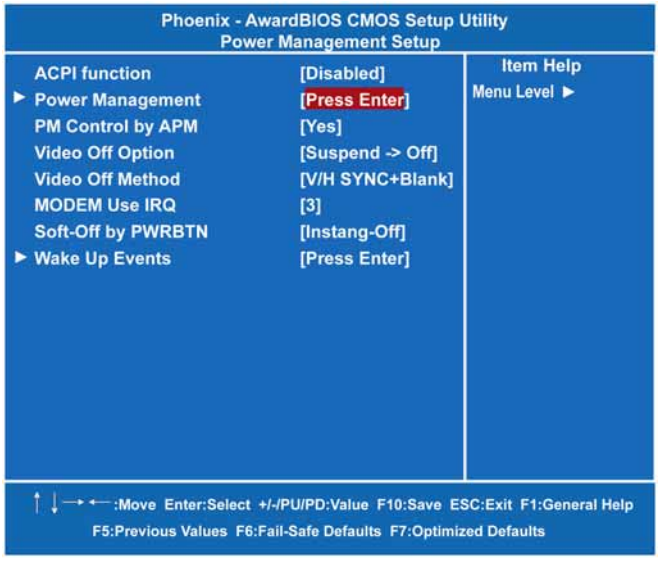
- **IDE HDD Block Mode**
  Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
- **Onboard FDC Controller**
  Select Enabled, if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. Options: Enabled and Disabled.
- **Onboard Serial Port 1 / 2**
  Select an address and corresponding interrupt for the serial port. Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.
- **UART 2 Mode**
  Use this item to select UART Mode.
- **IR, Function Duplex**
  This item is to select the IR half/full duplex function.
- **TX, RX inverting enable**
  This item is to enable the TX, RX inverting based on various H/W requirements. To avoid any system errors, it is recommended that you do not change the default setting.
- **Onboard Paralellel Port 1/2**
  This item allows you to determine the I/O address for onboard parallel port. Options: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7 and Disabled.
- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port while using the ECP mode.
- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require another mode in this field. Options: EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.
- **Onboard Parallel Port 3**
  This item assigns which I/O address to access onboard serial port 3.
- **Serial Port 3 Use IRQ**
  This item selects a corresponding interrupt for the third serial port.
- **Onboard Parallel Port 4**
  This item assigns which I/O address to access onboard serial port 4.

- **Serial Port 4 Use IRQ**
  This item selects a corresponding interrupt for the fourth serial port.
- **Onboard Legacy Audio**
  When this item is enabled, you can also select some setting for onboard sound.

Press <Esc> to return to the Main Menu.

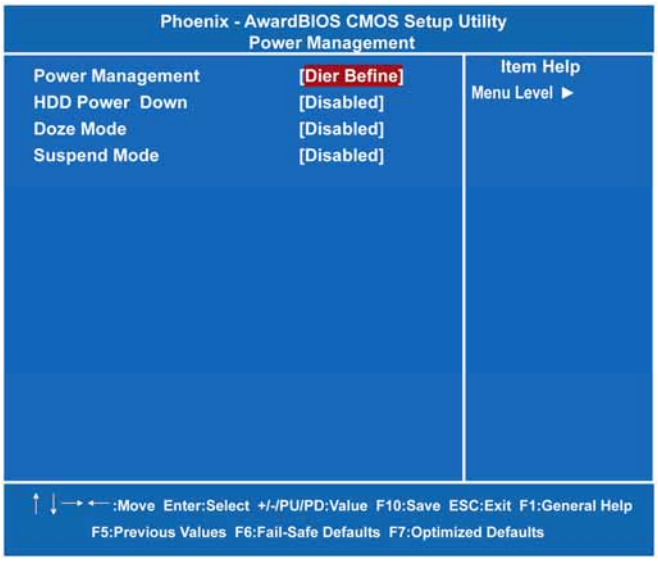
## 4.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI function [Disabled]
Power Management [Press Enter]
PM Control by APM [Yes]
Video Off Option [Suspend -> Off]
Video Off Method [V/H SYNC+Blank]
MODEM Use IRQ [3]
Soft-Off by PWRBTN [Instang-Off]
Wake Up Events [Press Enter]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".

- **Power Management**
  Scroll to this item and press <Enter> to view the sub menu Power Management.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management
Power Management [Dier Befine]
HDD Power Down [Disabled]
Doze Mode [Disabled]
Suspend Mode [Disabled]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

  - **Power Management**
    This option allows you to select the type of power Management.
  - **HDD Power Down**
    If HDD activity is not detected for a specified length of time in this field, the hard disk drive will be powered down while other devices remain active.
  - **Doze Mode**
    After the selected period of system inactivity, the CPU clock runs at slower speed while all other devices still operate at full speed.

- **Suspend Mode**
  After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is "Disabled".

| | |
|---|---|
| **Disabled** | System will never enter SUSPEND mode. |
| **1/2/4/6/8/10/20/ 30/40 Min/1 Hr** | Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded |

Press <Esc> to return to the Power Management Setup page.

- **PM Control by APM**
  When this item is enabled, an Advanced Power Management device will be activated to enhance maximum Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed in the system, selecting *"Yes"* gives better power savings. If maximum Power Saving is not enabled, this will be preset to *"No"*.
- **Video Off Option**
  This setting is used to control the mode in which the monitor will shut down. Setting options are:

| | |
|---|---|
| **Always On** | Monitor remains on during power-saving modes. |
| **Suspend → Off** | Monitor blanked when system enters Suspend mode. |
| **Susp, Stby→ Off** | Monitor blanked when system enters either Suspend or Standby mode. |
| **All Modes → Off** | Monitor blanked when system enters any power saving. |

- **Video Off Method**
  This setting determines the manner in which the monitor is blanked.

**Video Off Method**

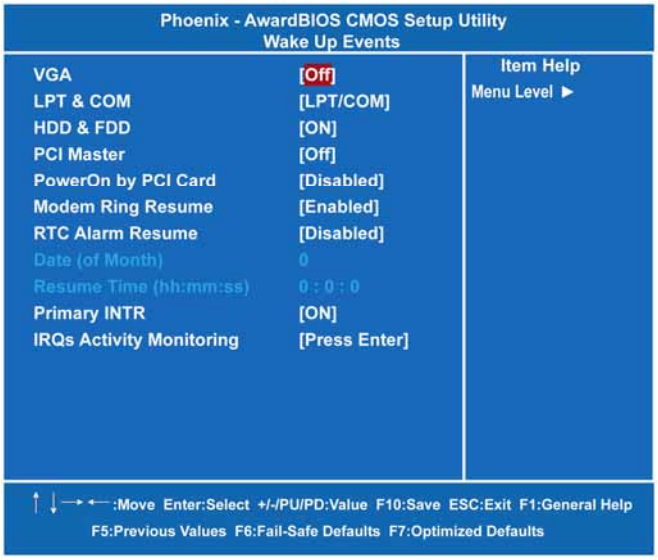
| | |
|---|---|
| **V/H SYNC+Blank** | It turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer. |
| **DPMS** | Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the supplied software for your video subsystem to select video power management values. |
| **Blank Screen** | The System only writes blanks to the video buffer. |

- **Moden Use IRQ**
  If you want an incoming call on a modem to automatically resume the system from a powersaving mode, use this item to specify the interrupt request line (IRQ) used by the modem. You might have to connect the fax/modem to the board Wake On Modem connector for working this feature.
- **Soft-Off by PWR-BTTN**
  This option only works with systems using an ATX power supply. It also allows users to define which type of soft power OFF sequence the system will follow. The default value is "*Instant-Off*".

| | |
|---|---|
| **Instant-Off** | This option follows the conventional manner of system performance when turning the power to OFF. Instant-Off is a software power OFF sequence requiring the power supply button is switched to OFF. |
| **Delay 4 Sec.** | Upon the system's turning OFF through the power switch, this option will delay the complete system power OFF sequence approximately 4 seconds. Within this delay period, the system will temporarily enter into the Suspend Mode enabling you to restart the system at once. |

- **Wake Up Events**

  Scroll to this item and press <Enter> to view the sub menu Wake Up Events.


Phoenix - AwardBIOS CMOS Setup Utility
Wake Up Events
VGA [Off]
LPT & COM [LPT/COM]
HDD & FDD [ON]
PCI Master [Off]
PowerOn by PCI Card [Disabled]
Modem Ring Resume [Enabled]
RTC Alarm Resume [Disabled]
Date (of Month) 0
Resume Time (hh:mm:ss) 0 : 0 : 0
Primary INTR [ON]
IRQs Activity Monitoring [Press Enter]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

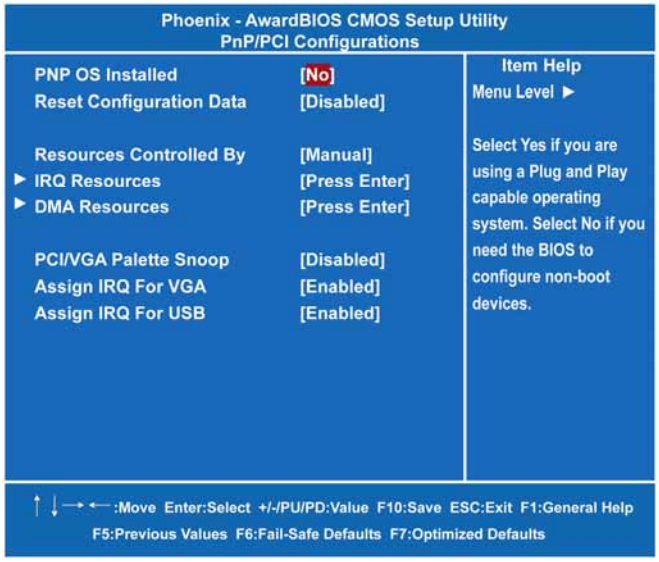
  - **VGA**
    Use this item to set VGA ON or OFF.
  - **LPT & COM**
    When this item is enabled, the system will resume from suspend mode if FDD, COM port, or LPT port is active.
  - **HDD & FDD**
    When this item is enabled, the system will resume from suspend mode if Primary IDE 0 (1) or Secondary IDE 0 (1) is active.
  - **PCI Master**
    Use this item to set PCI Master ON or OFF.
  - **PowerOn by PCI Card**
    If enable this item, the system can automatically be powered on when the PCI Modem or PCI LAN card receives an incoming call.
  - **Modem Ring Resume**
    This item enables the modem ring to wake up the computer system from a power saving mode.

- **RTC Alarm Resume**
  When [Enabled], your can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.
- **Date (of Month)**
  When ***RTC Alarm Resume*** is set to [Enabled], the field specifies the month for it.
- **Resume Time (hh:mm:ss)**
  You can choose what hour, minute and second the system will boot up.
- **Primary INTR**
  Use this item to set Primary INTR ON or OFF. Selecting *ON* will cause the system to wake up from power saving modes if activity is detected from any enabled IRQ channels.

Press <Esc> to return to the Power Management Setup page.

## 4.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.

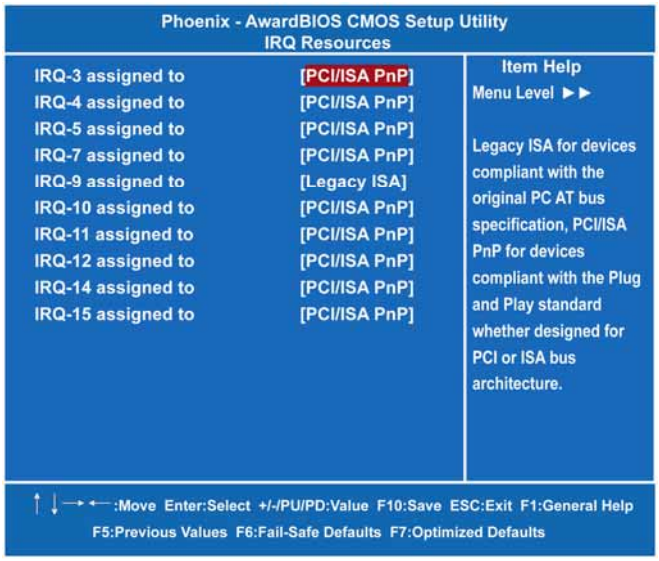

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
PNP OS Installed [No]
Reset Configuration Data [Disabled]
Resources Controlled By [Manual]
IRQ Resources [Press Enter]
DMA Resources [Press Enter]
PCI/VGA Palette Snoop [Disabled]
Assign IRQ For VGA [Enabled]
Assign IRQ For USB [Enabled]
Item Help
Menu Level ▶
Select Yes if you are using a Plug and Play capable operating system. Select No if you need the BIOS to configure non-boot devices.
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

- **PNP OS Installed**
  Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95). The default value is "No".
- **Reset Configuration Data**
  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: Enabled, Disabled.
- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:
  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default value is *"PCI/ISA PnP"*.

Scroll to this item and press <Enter> to view the sub IRQ Resources.


Phoenix - AwardBIOS CMOS Setup Utility
IRQ Resources
IRQ-3 assigned to [PCI/ISA PnP]
IRQ-4 assigned to [PCI/ISA PnP]
IRQ-5 assigned to [PCI/ISA PnP]
IRQ-7 assigned to [PCI/ISA PnP]
IRQ-9 assigned to [Legacy ISA]
IRQ-10 assigned to [PCI/ISA PnP]
IRQ-11 assigned to [PCI/ISA PnP]
IRQ-12 assigned to [PCI/ISA PnP]
IRQ-14 assigned to [PCI/ISA PnP]
IRQ-15 assigned to [PCI/ISA PnP]
Item Help
Menu Level ►►
Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Press <Esc> to return to the PnP/PCI Configurations page.

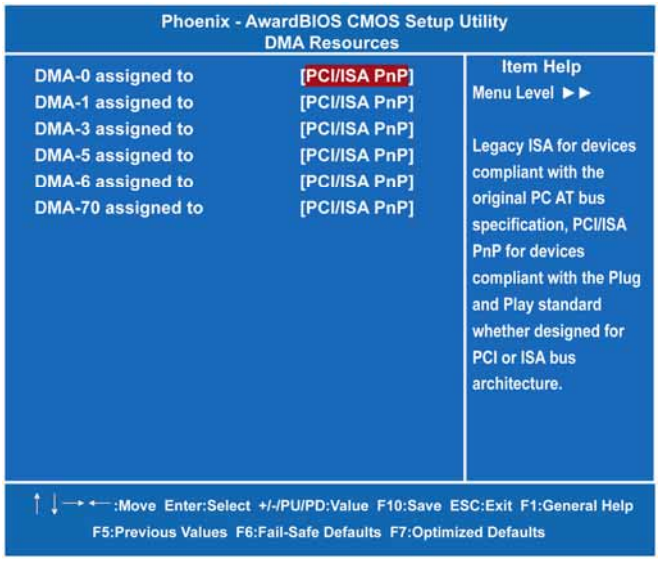
- **DMA Resources**

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel.
2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The default value is *"PCI/ISA PnP"*.

Scroll to this item and press <Enter> to view the sub DMA Resources.

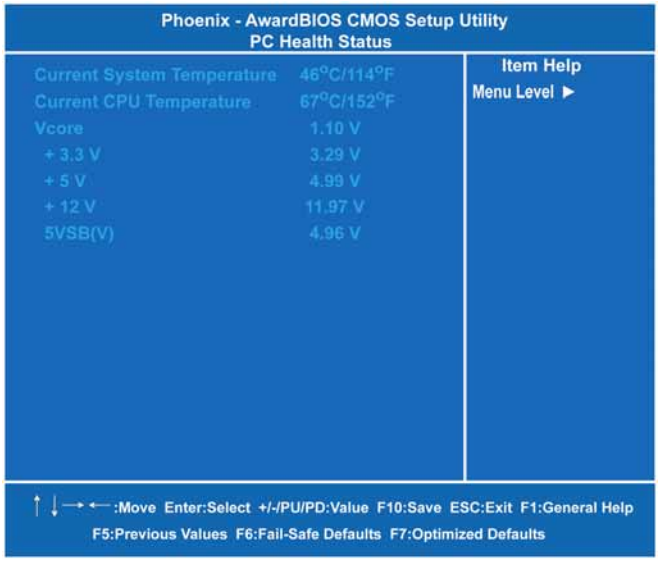

Phoenix - AwardBIOS CMOS Setup Utility
DMA Resources
DMA-0 assigned to [PCI/ISA PnP]
DMA-1 assigned to [PCI/ISA PnP]
DMA-3 assigned to [PCI/ISA PnP]
DMA-5 assigned to [PCI/ISA PnP]
DMA-6 assigned to [PCI/ISA PnP]
DMA-70 assigned to [PCI/ISA PnP]
Item Help
Menu Level ►►
Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Press <Esc> to return to the PnP/PCI Configurations page.

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.
- **Assign IRQ For VGA**
  The Enabled item allows the BIOS to auto-route an IRQ for use by a VGA card.
- **Assign IRQ For USB**
  It enables or disables IRQ allocation for the USB (Universal Serial Bus). Enable this if you are using a USB device.

## 4.11 PC Health Status

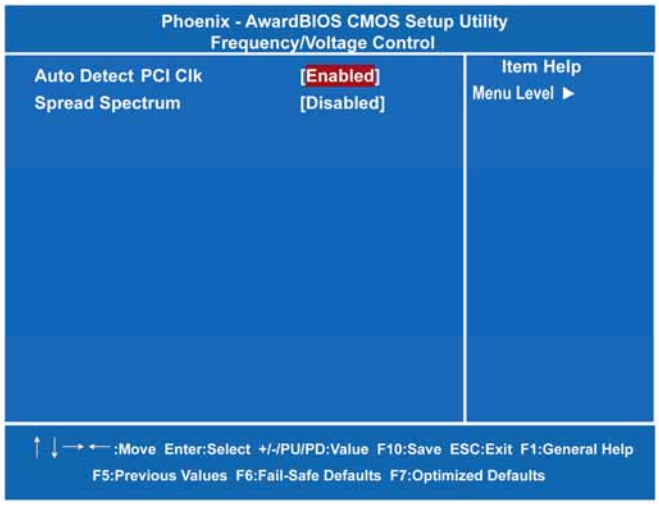
This section supports hardware monitering that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.


Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status
Current System Temperature 46°C/114°F
Current CPU Temperature 67°C/152°F
Vcore 1.10 V
+ 3.3 V 3.29 V
+ 5 V 4.99 V
+ 12 V 11.97 V
5VSB(V) 4.96 V
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

- **Current SYSTEM Temperature**
  Show you the current system1 temperature.
- **Current CPU Temperature**
  The current system CPU temperature will be automatically detected by the system.
- **Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB**
  Show you the voltage of +3.3V/+5V/+12V.

## 4.12 Frequency/Voltage Control

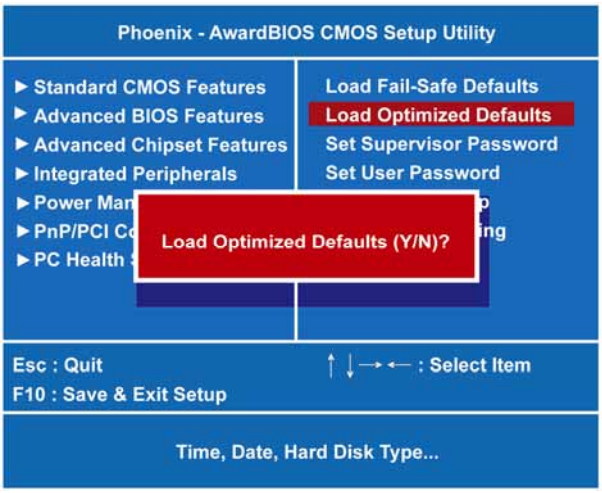
This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.




- **Auto Detect PCI Clk**
  The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).
- **Spread Spectrum**
  If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.

## 4.13 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.




To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

## 4.14 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

**ENTER PASSWORD**

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

**PASSWORD DISABLED**

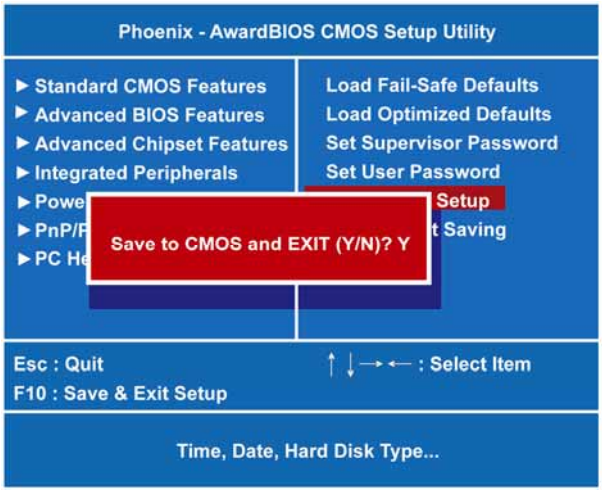
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

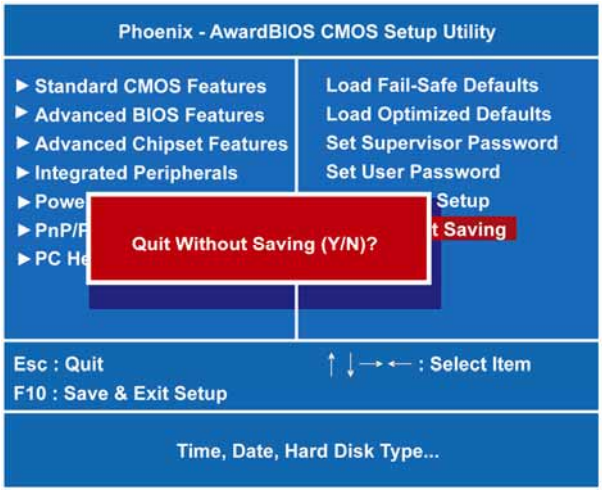
## 4.15 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.



## 4.16 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.



## *MEMO*

# A p p e n d i x A
# Watchdog Timer

## Watchdog Timer Setting

## Using the Watchdog Function

The **SBC84602** CPU Board uses version 2.0 of the watchdog timer. This onboard WDT generates either a system reset or non-maskable interrupt (NMI), depending on the settings made on jumper **JP3** of **SBC84602**. Follow the steps below to enable and program the watchdog function of **SBC84602**.

**Start**

↓

| | | |
|---|---|---|
| **Un-Lock WDT** | **:** | **OUT 120H 0AH ; enter WDT function**<br>**OUT 120H 0BH ; enable WDT function** |

↓

| | | |
|---|---|---|
| **Set multiple (1~4)** | **:** | **OUT 120 0NH ; N=1,2,3 or 4** |

↓

| | | |
|---|---|---|
| **Set base timer (0~F)** | **:** | **OUT 121 0MH ; M=0,1,2,…F** |

↓

**WDT counting**

↓

| | | |
|---|---|---|
| **re-set timer** | **:** | **OUT 121 0MH ; M=0,1,2,…F** |

↓

| | | |
|---|---|---|
| **IF No re-set timer** | **:** | **WDT time-out, generate RESET or NMI** |

↓

| | | |
|---|---|---|
| **IF to disable WDT** | **:** | **OUT 120 00H ; Can be disable at any time** |

| M | N | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 0 | 0.5 secs. | 5 secs. | 50 secs. | 100 secs. |
| 1 | 1 secs. | 10 secs. | 100 secs. | 200 secs. |
| 2 | 1.5 secs. | 15 secs. | 150 secs. | 300 secs. |
| 3 | 2 secs. | 20 secs. | 200 secs. | 400 secs. |
| 4 | 2.5 secs. | 25 secs. | 250 secs. | 500 secs. |
| 5 | 3 secs. | 30 secs. | 300 secs. | 600 secs. |
| 6 | 3.5 secs. | 35 secs. | 350 secs. | 700 secs. |
| 7 | 4 secs. | 40 secs. | 400 secs. | 800 secs. |
| 8 | 4.5 secs. | 45 secs. | 450 secs. | 900 secs. |
| 9 | 5 secs. | 50 secs. | 500 secs. | 1000 secs. |
| A | 5.5 secs. | 55 secs. | 550 secs. | 1100 secs. |
| B | 6 secs. | 60 secs. | 600 secs. | 1200 secs. |
| C | 6.5 secs. | 65 secs. | 650 secs. | 1300 secs. |
| D | 7 secs. | 70 secs. | 700 secs. | 1400 secs. |
| E | 7.5 secs. | 75 secs. | 750 secs. | 1500 secs. |
| F | 8 secs. | 80 secs. | 800 secs. | 1600 secs. |

# A p p e n d i x B
# Digital I/O

## Digital I/O Software Programming

The Digital I/O on the board is not an isolated type.

| Output | Address | Bit | Output | Address | Bit |
|---|---|---|---|---|---|
| Out-0 | 123h | 0 | In-0 | 123h | 0 |
| Out-1 | 123h | 1 | In-1 | 123h | 1 |
| Out-2 | 123h | 2 | In-2 | 123h | 2 |
| Out-3 | 123h | 3 | In-3 | 123h | 3 |
| Out-4 | 123h | 4 | In-4 | 123h | 4 |
| Out-5 | 123h | 5 | In-5 | 123h | 5 |
| Out-6 | 123h | 6 | In-6 | 123h | 6 |
| Out-7 | 123h | 7 | In-7 | 123h | 7 |

**Example program:**

| | | |
|---|---|---|
| **Out 123h, 03h** | Out-0, Out-1 | Turn On |
| | Out-2, Out-3 | Turn Off |
| **Out 123h, 0Ah** | Out-0, Out-2 | Turn Off |
| | Out-1, Out-3 | Turn On |

**Example program:**

If INPUT 123 is (1011), then INPUT-2 is "0".
If INPUT 123 is (1100), then INPUT-0 & 1 are "0".

** The INPUT signal has to be TTL signal